

Skeletal columnar coatings

Description of Technology: Skeletal columnar coatings with a well-adhered columnar having both intercolumn and intra-column porosity are metallic alloys of catalytic elements and non-catalytic elements and are particularly useful in making catalytic surfaces, electro-active surfaces and self-cleaning surfaces.

Patent Listing:

1. **US Patent No.** 5,993,979, November 30, 1999, "Skeletal columnar coatings." http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=5,993,979.PN.&OS=PN/5,993,979&RS=PN/5,993,979

Market Potential: This invention provides skeletal columnar coatings having utility as catalytic surfaces. Applications of interest for the improved catalytic coatings of the present invention include the removal, through oxidative processes, of organic deposits from fiber and film processing equipment, including the elimination of drips from spinning and extrusion dies, and use as supported catalysts in chemical processes.

Modifying the surface of critical process components, by incorporation of a "self-cleaning" catalytic surface is a low capitalization route to improved process performance. There is a need for "self-cleaning" catalytic coatings which have superior mechanical stability and catalytic performance compared to those known in the art. Catalytic coatings known in the art are typically derived from the pyrolysis of surface applied (i.e., painted-on) organometallic materials, or are prepared via wet chemical surface modification means. Generally, coatings prepared by these processes are not sufficiently durable in use.

Advantages of skeletal columnar coatings as provided by this invention are higher catalytic activity and acceptable abrasion resistance at these higher activities. Skeletal metal/ceramic structures produced by the processes of this invention are expected to possess exceptional abrasion resistance.

Benefits:

- Higher catalytic activity
- Exceptional abrasion resistance.

Applications:

- Removal of organic deposits from fiber and film process equipment.
- Elimination of drips from spinning and extrusion dies.
- Supported catalysts in chemical processes.